



RDECOM



Briefing to Industry

15 June 2009



robotics RODEO

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TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.



Agenda



- Introductions
- Review of Operational Need Statement (ONS) & Vignettes
- Overview of Rodeo
 - Extravaganza
 - Robotics Technology Observation, Demonstration and Discussion (RTOD2)
 - Overview
 - Facilities
 - Starter Packet
- Q and A



ONS Overviews



Autonomous Detection Vehicle

- Autonomous route investigation and hazard marking
- Fundamentally an appliqué kit for a vehicle
- Leverage previous work by Night Vision Laboratory



Convoy Logistics

- Kit-based system for Tactical Wheeled Vehicles
- Automated leader-follower
- User assessment at Fort Hood in the September – October timeframe



Robotic Wingman

- Large armed robotic platform assumes role as a member of squad / formation
- Leverage existing ARDEC, AMREC, CERDEC technologies and Fort Hood rodeo for target acquisition and engagement capability



Robotics Rodeo

- Input from Army needs (ONS)
- Demonstration of related state of the art technologies
- Provide user and SME feedback to industry

Persistent Stare

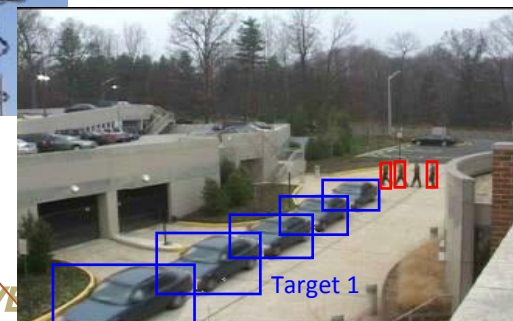
- Small robot with autonomous navigation to perform recon and surveillance
- Utilize robotic rodeo to demonstrate vendor capabilities



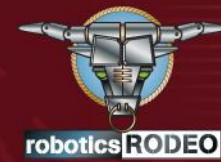
VOIED

Defeat

- Capability for autonomous VOIED defeat
- Utilize robotic rodeo to demonstrate vendor capabilities
- HMMWV and M113 target platforms



TECHNOLOGY DRIVE



Rodeo overview



Rodeo Overview



Mission Statement

III Corps and TARDEC hosts a Robotics Rodeo from 31 August to 4 September on Fort Hood to **motivate** key decision makers and the robotics industry, **educate** Soldiers and developers, and **observe** demonstrations of the current state of robotic technologies in order to encourage the development of robotic systems supporting warfighter operational needs.

Objective

A combination of task-based open events and 'free style' demonstration for **market research, not source selection**. This will be an opportunity for all the robotics industry that have products that are at or above TRL 6 to demonstrate them in a **military operating environment**.

Robotics Rodeo Events at Ft. Hood

31 August – 4 September 2009

1. Robotics Extravaganza

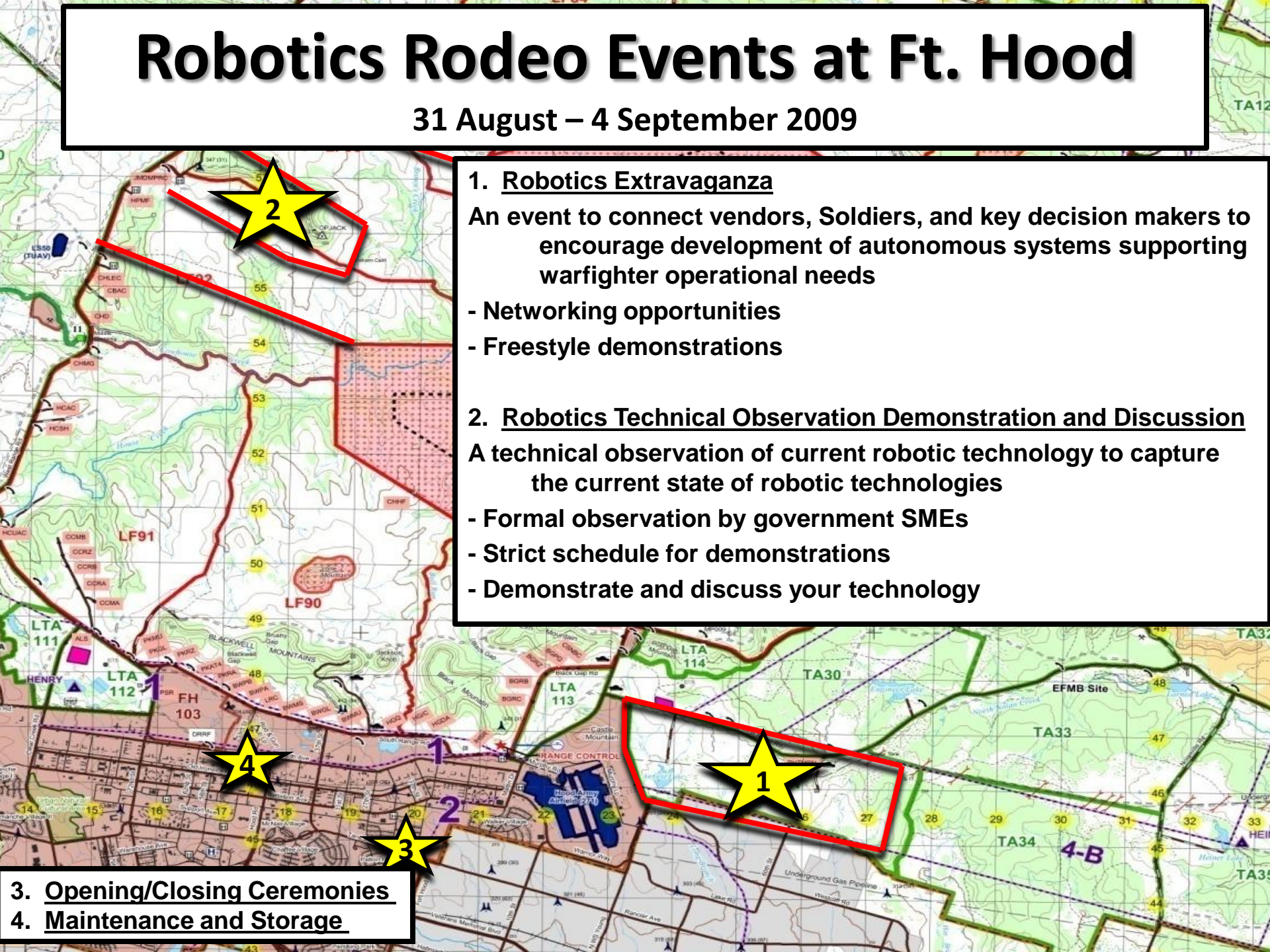
An event to connect vendors, Soldiers, and key decision makers to encourage development of autonomous systems supporting warfighter operational needs

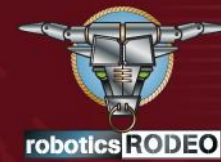
- Networking opportunities
- Freestyle demonstrations

2. Robotics Technical Observation Demonstration and Discussion

A technical observation of current robotic technology to capture the current state of robotic technologies

- Formal observation by government SMEs
- Strict schedule for demonstrations
- Demonstrate and discuss your technology

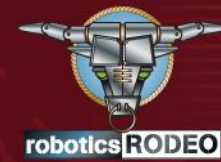
- 
- ## 3. Opening/Closing Ceremonies
- ## 4. Maintenance and Storage



Extravaganza overview



What is It?



- What is the Robotics Extravaganza?
 - A networking opportunity
 - Interaction between industry, Soldiers and Government representatives
 - Opportunity to discuss robotics with key decision makers
 - Freestyle demonstration
 - Vendor booths
 - Lower TRLs
- Submit Technology Application Ideas (TAIs) in the starter packet format to Rodeo mailbox
 - DAMI_RoboticsRodeo@conus.army.mil
- Submit request to participate in the Extravaganza alone to Rodeo mailbox
 - DAMI_RoboticsRodeo@conus.army.mil



- Generates excitement for robotics

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What is in it for Industry?



- **An opportunity to physically demonstrate component technologies**
 - Clabber Creek Range, Jack Mountain Range, Phantom Run (including IED lanes), and Combined Arms Collective Training Facility (CACTF)
- **A single point of contact for both the Government & Contractors**
- **Improved visibility**
- **Enhanced communication**
 - Gain access to PEO and PMs
 - Gain access to users, testers, and requirement developers
 - Gain access to senior Army leaders
 - Gain access to other OEMs
 - Opportunity to identify potential industry partners

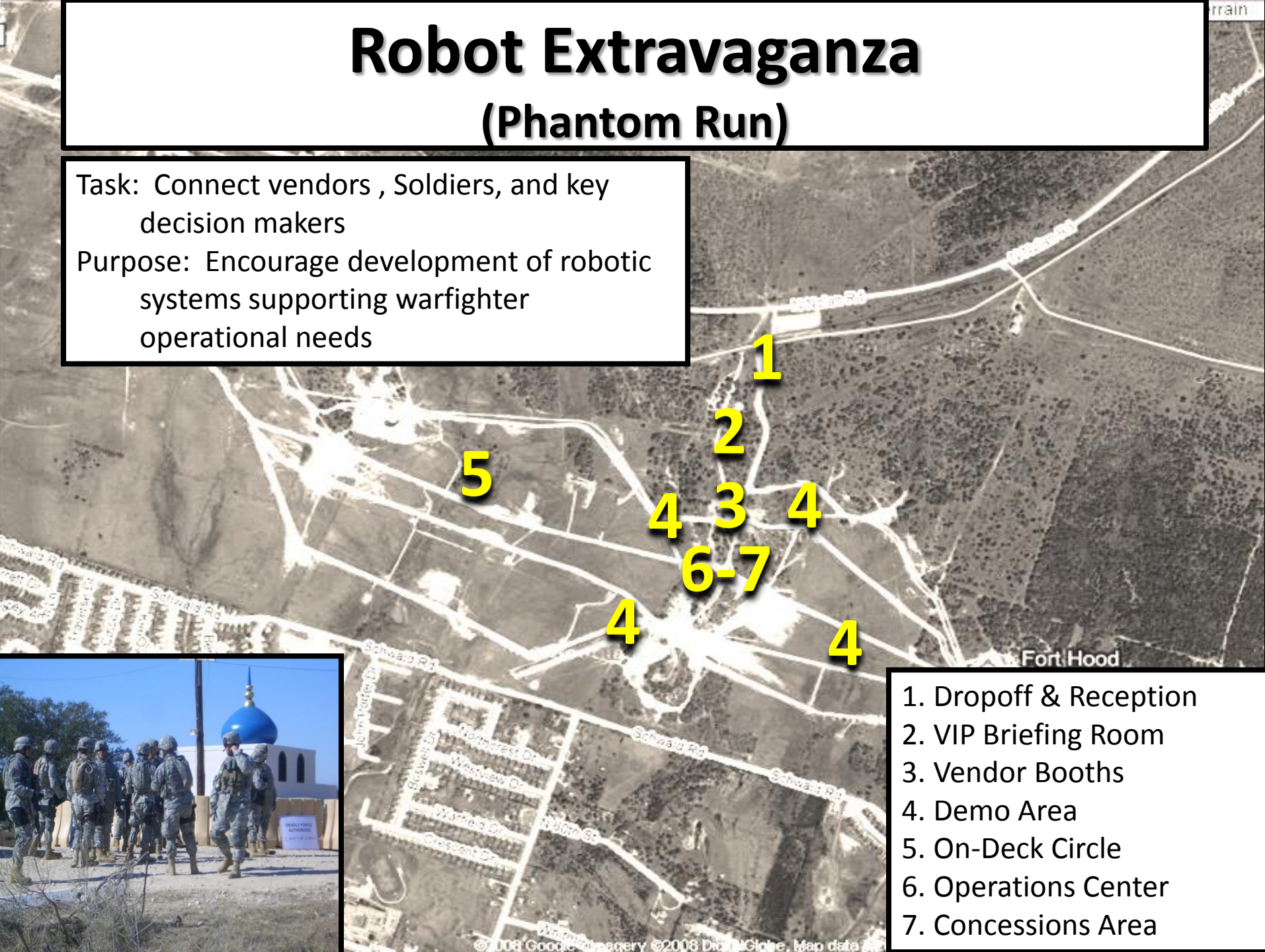
An opportunity to gain feedback on products and technologies

Robot Extravaganza

(Phantom Run)

Task: Connect vendors , Soldiers, and key decision makers

Purpose: Encourage development of robotic systems supporting warfighter operational needs



1. Dropoff & Reception
2. VIP Briefing Room
3. Vendor Booths
4. Demo Area
5. On-Deck Circle
6. Operations Center
7. Concessions Area

Phantom Run



IED Lanes

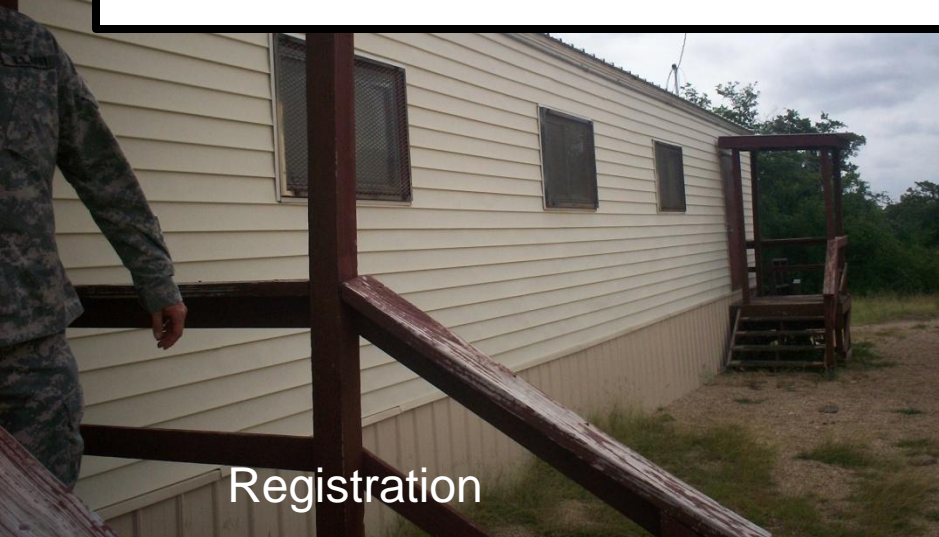


Marked Awareness Lane

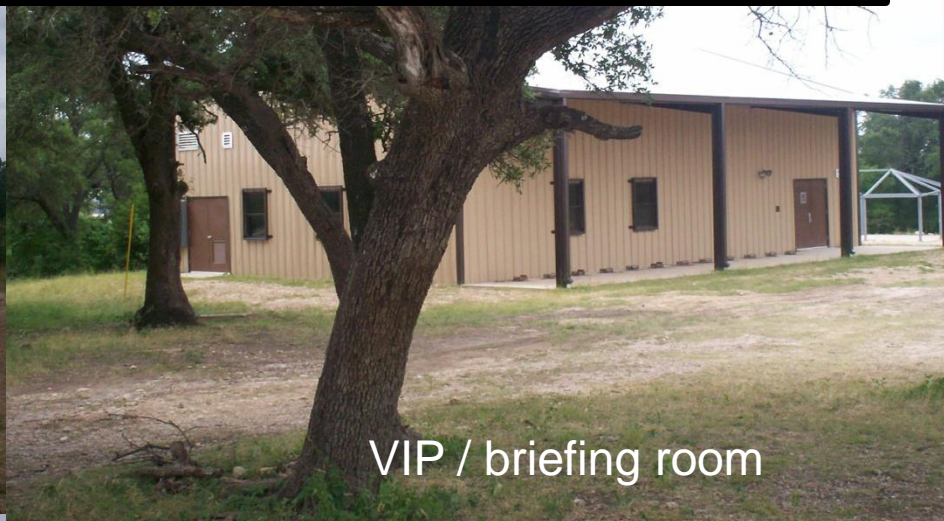
Phantom Run



Phantom Run



Registration



VIP / briefing room



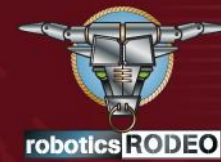
IED lanes



IED training site

Phantom Run Warm Up Area

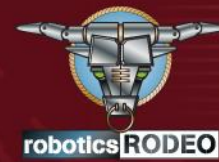




RTOD2 overview



RTOD2—What is It?



- What is RTOD2?
 - Robotic Technology Observation, Demonstration and Discussion (RTOD2)
 - Multi-phased, continuous process designed to improve robotic capabilities
 - Lead is Intelligent Ground Systems (IGS) at TARDEC but work very closely with Joint Center for Robotics also at TARDEC and PM Robotic Systems Joint Project Office (PM RS-JPO)
 - Identify & leverage Industry's investment in advanced technologies
 - Provide both the Government & Contractors a single point of contact
- Qualification
 - Technology Readiness Level (TRL) 6
 - Actual system completed/qualified through test & demonstration (no R&D)
- Submit Technology Application Ideas (TAIs) in the starter packet format to Rodeo mailbox
 - DAMI_RoboticsRodeo@conus.army.mil



- Supports Army's Robotics Vision through a disciplined approach

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Key Participants



User

- III Corps
- Training and Doctrine Command (TRADOC)
- Army Capabilities Integration Center (ARCIC)
- CASCOM

PEO / PM

- RS-JPO Acquisition office responsible for the Army's robotic equipment
- FCS unmanned systems
- PEO CS/CSS and others

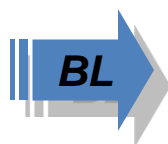
Research & Development

- TARDEC
- ARL
- RDECOM
- ARDEC
- Natick
- AMRDEC
- SPAWAR
- DARPA

Other Organizations

- HQDA
- JGRE
- Test Community
- Other PMs
- Other Agencies

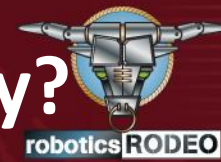
RTOD2
Observation
Teams



- Diverse viewpoints represented through process



What is in it for Industry?

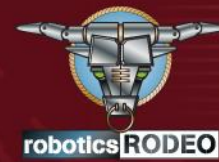


- **An opportunity to physically demonstrate component technologies**
 - Clabber Creek Range, Jack Mountain Range, Phantom Run (including IED lanes), and Combined Arms Collective Training Facility (CACTF)
- **A single point of contact for both the Government & Contractors**
- **Improved visibility**
- **Enhanced communication**
 - Gain access to PEO and PMs
 - Gain access to users, testers, and requirement developers
 - Gain access to senior Army leaders
 - Gain access to other OEMs
 - Opportunity to identify potential industry partners

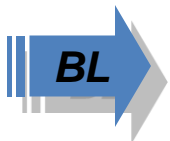
An opportunity to gain feedback on products and technologies



Desired Capabilities



- Emphasis on following robotic capabilities:
 - Large and Small Autonomous Mobility
 - Small Robotic Applications
 - Sensors/ Reconnaissance, Surveillance, and Target Acquisition (RSTA)
 - General Robotics
- And these scenarios:
 - Persistence Stare
 - Convoy Operations
 - Manned/ Unmanned Teaming
 - Route Clearance

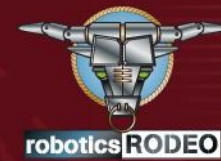


- *Desired capabilities addresses identified gaps*
- *RTOD2 in sync with the User*

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How do I Start?



- How Manufacturers can obtain more information:
 - Web site for latest Rodeo information
 - **<http://tardec.army.mil/roboticsrodeo.asp>**
- How to get engaged:
 - Submit Technology Application Ideas (TAIs) in starter packet format to TARDEC mailbox at **DAMI_RoboticsRodeo@conus.army.mil**
 - Submit TAIs at any time – window closes 8 July 2009.
- Demo Plans will be requested after an initial review
- Schedules will be published not later than 19 August at GVSETS.



RTOD2 Process



Overview of activities from vendor submission to Government referrals

DAMI_RoboticsRodeo@conus.army.mil

1

<http://tardec.army.mil/roboticsrodeo.asp>

2

Technology
Application
Idea (TAI) to
Rodeo
Mailbox

3

RTOD2 IPT REVIEW

TAIs become
living document in ACE.
Shared by IPT:
PMs, SMEs, User, Logistics, Test &
Training members conduct Assessments

Step 1

Categorize

Step 2

TRL Review

Step 3

ACE & IPT
Collaboration

Step 4

Invite vendors /
prepare & resource
Demo schedule

Step 5

Conduct Demos
w / Observer Teams

RTOD2
Office. ACE
Mgt.

Refer most
promising
technologies

PM & OEM
Impact
Review

PM &
Acquisition
Review /
Decision

5

4

Referral
Letters to
other
agencies

Example
TRADOC
Req. Gen.

4

Letter
Feedback to
Industry

RTOD2 is
Market Research

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Robotics Technical Observation, Demonstration and Discussion (RTOD2)

1, 4

3

2

4

4

2, 4



2

- 1. Operations Center and VIP Room
- 2. Demo Areas
- 3. Instrumentation Installation
- 4. Robotic Observation Team Briefing Rooms

Task: Conduct technical observation of current robotic technology
Task: Create database of robotic capabilities
Purpose: Capture the current state of robotic technologies

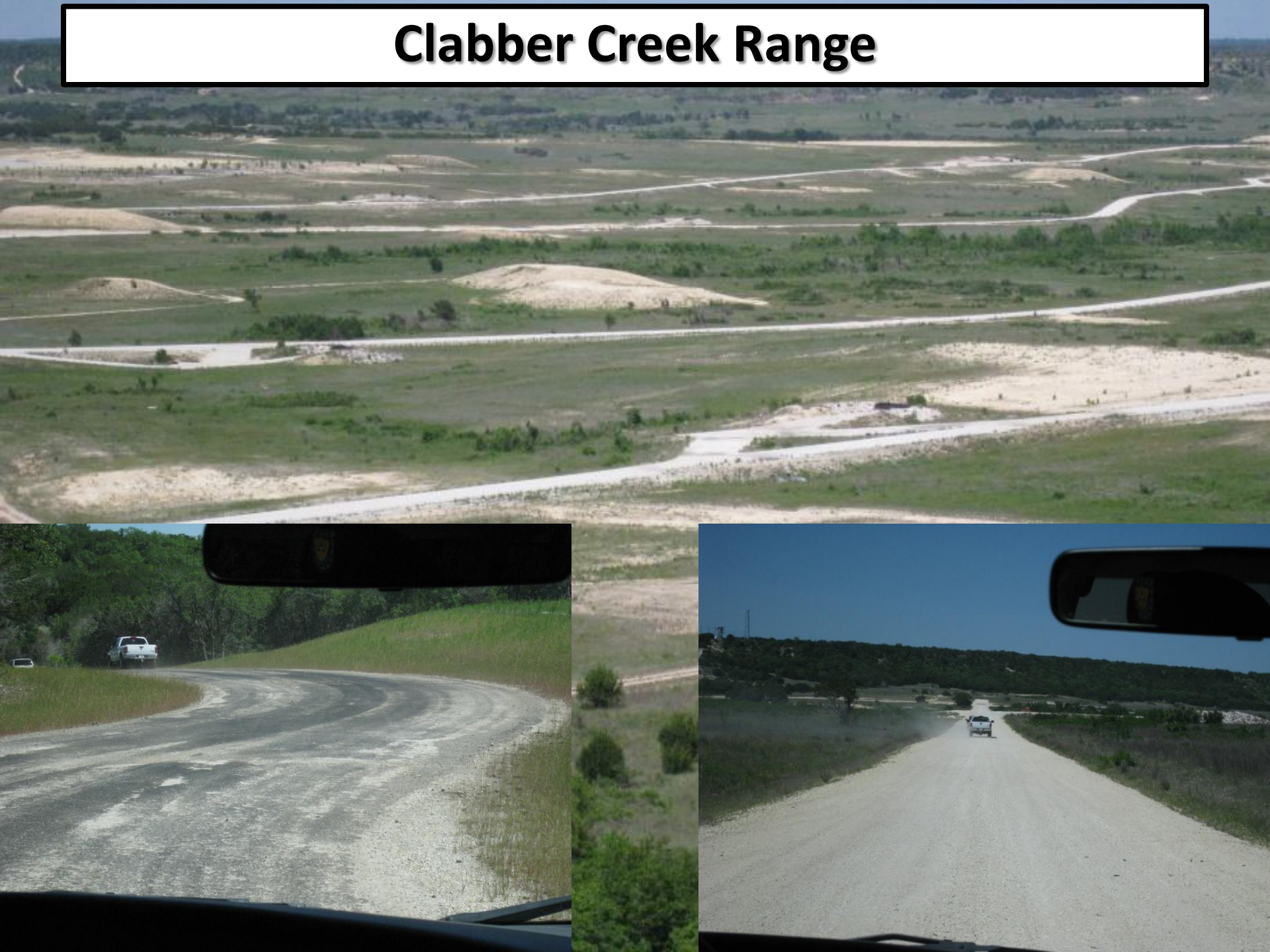
Range Operations Center (ROC)



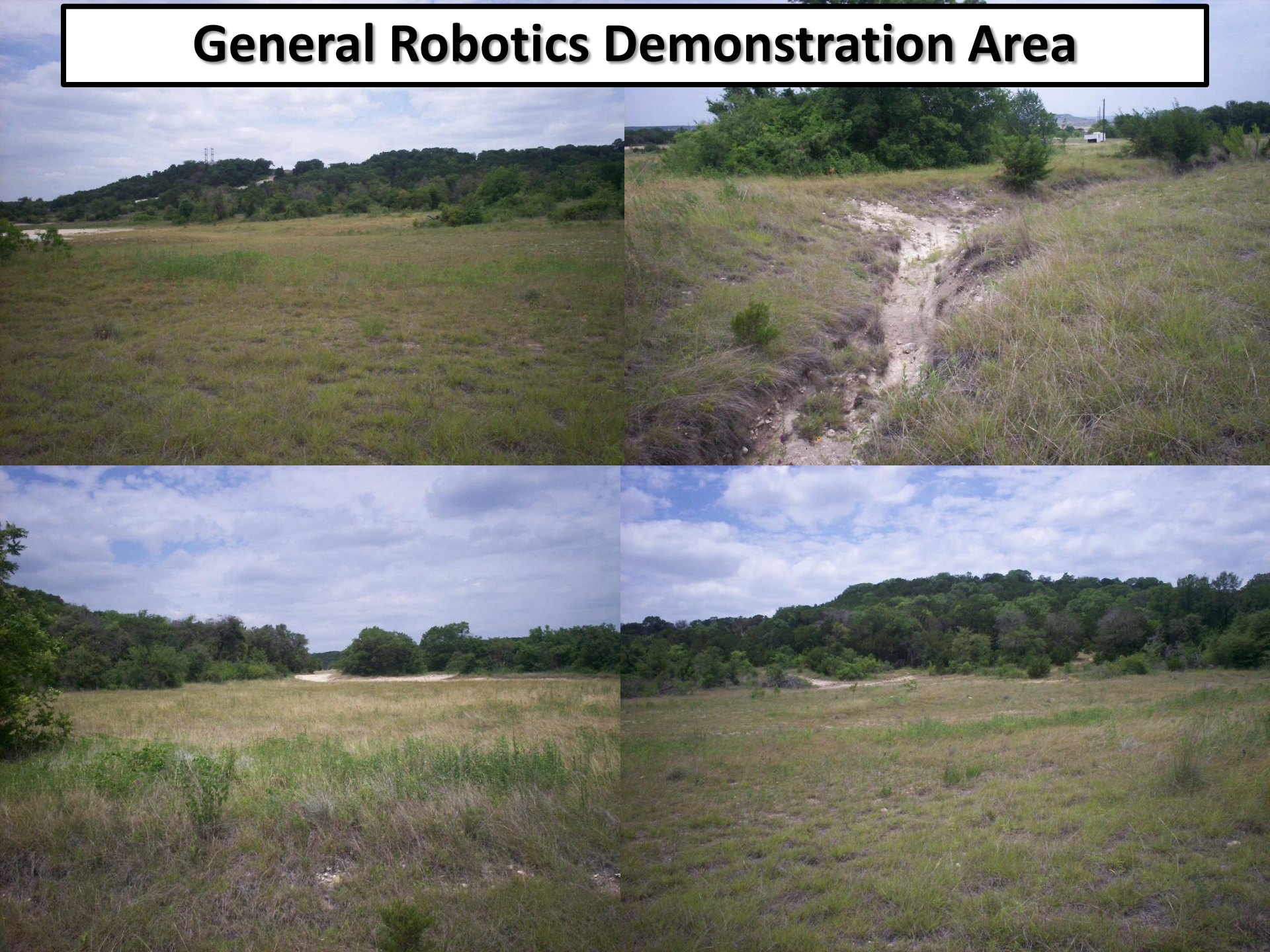
ROC

View from the ROC

Clabber Creek Range



General Robotics Demonstration Area



Combined Arms Collective Training Facility (CACTF)





Standardized form to review all proposals for the Robotics Rodeo housed on the TARDEC website

Robotics Rodeo (RR) Technology Demonstrations

Starter Package

NOTE:
Please do not submit, send, present, or demonstrate proprietary or confidential information. The present, or demonstration must be able to be shown on your public web page.

Updated: 21 MAY 09

Standardized form to propose for the Robo housed on the TARDE

Instructions for RR Starter Package:
Please read and fill out all included forms and send completed package to RoboticsRodeo@army.mil in M3 Word format with "RR Starter Package, Your Company Name" as the subject line.
The information that you submit, send, present, or demonstrate must be able to be shown on your public web page.

Technology Application

Name of Technology: _____

Company: _____

Address: _____

Suite: _____

City: _____ State: _____ Zip: _____

Country: _____ Web: _____

1) Primary Capability Addressed by Technology:

FOCUS AREA: ☐ Large Autonomous Mobility ☐ Personal Robotics ☐ Small Robotic Application ☐ Conventional Robotics ☐ Sensors/Reconnaissance, Surveillance, and Target Acquisition (RSTA) ☐ Man-in-the-Loop ☐ General Robotics ☐ Other: _____

2a) Please look at the Technology Readiness document.
Please check the TRL for your technology: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9
(Note: Your TRL level must be at least 6 and 9)
Please check the Autonomy Level for your technology: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9
(Note: Your Autonomy level must be at least 7)

3) Select one answer for each question and provide written answers where requested. (Please send document "Technology Readiness Levels (TRLs) and their Definitions" on page 6 of this package for more guidance)
Note: This section is MANDATORY! You must be able to provide proof!

3a) Are the basic principles of your technology observed and reported? Yes ☐ No ☐

3b) Is your technology concept and/or application documented? Yes ☐ No ☐

3c) Have you proven your analytical and experimental/critical functionality and characteristics? Yes ☐ No ☐

3d) How? ☐ Yes ☐ No ☐

4) Have you tested components and/or breadboarded? What laboratory? _____

What was done? _____

What were the criteria for success? _____

5) Have you tested components and/or breadboarded? Where? _____

Who was involved from the military? _____

Name: _____

Phone: _____

6) Have you tested the system/subsystem? Where? _____

Who was involved from the military? _____

Name: _____

Phone: _____

7) Has your actual system been completed? Where? _____

Who was involved from the military? _____

Name: _____

Phone: _____

8) Has the actual system been proven through? Where? _____

Who was involved from the military? _____

Name: _____

Phone: _____

9) If this TRL is a re-submission of your idea, technology: (Limit of 600 Characters) _____

10) If this TRL is a re-submission of your idea, technology: (Limit of 600 Characters) _____

11) Are you willing to share information with the military? (Limit of 600 Characters) _____

12) What are weight and dimension characteristics? _____

RR Starter Package

5) Is your technology being used on any current military system(s)? Yes ☐ No ☐

If yes, what platform(s) is your technology on? (Limit of 600 Characters) _____

7) Is your technology currently being applied? If so, how is it being applied? (Limit of 600 Characters) _____

8) What developmental issues with your technology in the military environment (extreme temperatures, size, weight, etc.)? _____

9) Have you ever shown/discussed been in use? If so, what are the names and the emails of the military personnel? _____

Name: _____

Name: _____

Name: _____

Name: _____

10) If this TRL is a re-submission of your idea, technology: (Limit of 600 Characters) _____

11) Are you willing to share information with the military? (Limit of 600 Characters) _____

12) What are weight and dimension characteristics? _____

RR Starter Package

Demonstration Plan Form

Name of Technology (same as above): _____

Company: _____ Primary Contact: _____

1) Will your demonstration be a static display / dynamic display / and/or a conference room briefing? ☐ Static ☐ Dynamic ☐ Conference Room

2) If demonstration is a static display, how long? ☐ 5-10 ☐ 10-15 ☐ 15-20 ☐ Other: _____

3) If demonstration is a dynamic / interactive demonstration? ☐ 10-15 ☐ 15-20 ☐ Greater than 20

4a) Are test tracks or other special facilities required? If yes, please list any requirements. (Limit of 600 Characters) _____

4b) When would be the best time to conduct? ☐ Day ☐ Night

4c) If demonstration is a conference room brief, what equipment? ☐ Projector ☐ Computer ☐ Other: _____

5) Will you need equipment/vehicles for and/or if yes, please list details. (Limit of 600 Characters) _____

6a) Will the equipment/vehicle need to be shipped? Yes ☐ No ☐ Yes, Other: _____

6b) Will you need technicians available to assist? If yes, please list details. (Limit of 600 Characters) _____

6c) What is your estimate of how much time it will take to set up? ☐ 30 Min. or less ☐ 30-60 Min. ☐ 60-90 Min. ☐ 90-120 Min. ☐ 120-180 Min. ☐ 180-240 Min. ☐ 240-360 Min. ☐ 360-480 Min. ☐ 480-720 Min. ☐ 720-960 Min. ☐ 960-1440 Min. ☐ 1440-2160 Min. ☐ 2160-2880 Min. ☐ 2880-3600 Min. ☐ 3600-4320 Min. ☐ 4320-5040 Min. ☐ 5040-5760 Min. ☐ 5760-6480 Min. ☐ 6480-7200 Min. ☐ 7200-7920 Min. ☐ 7920-8640 Min. ☐ 8640-9360 Min. ☐ 9360-10080 Min. ☐ 10080-10800 Min. ☐ 10800-11520 Min. ☐ 11520-12240 Min. ☐ 12240-12960 Min. ☐ 12960-13680 Min. ☐ 13680-14400 Min. ☐ 14400-15120 Min. ☐ 15120-15840 Min. ☐ 15840-16560 Min. ☐ 16560-17280 Min. ☐ 17280-18000 Min. ☐ 18000-18720 Min. ☐ 18720-19440 Min. ☐ 19440-20160 Min. ☐ 20160-20880 Min. ☐ 20880-21600 Min. ☐ 21600-22320 Min. ☐ 22320-23040 Min. ☐ 23040-23760 Min. ☐ 23760-24480 Min. ☐ 24480-25200 Min. ☐ 25200-25920 Min. ☐ 25920-26640 Min. ☐ 26640-27360 Min. ☐ 27360-28080 Min. ☐ 28080-28800 Min. ☐ 28800-29520 Min. ☐ 29520-30240 Min. ☐ 30240-30960 Min. ☐ 30960-31680 Min. ☐ 31680-32400 Min. ☐ 32400-33120 Min. ☐ 33120-33840 Min. ☐ 33840-34560 Min. ☐ 34560-35280 Min. ☐ 35280-36000 Min. ☐ 36000-36720 Min. ☐ 36720-37440 Min. ☐ 37440-38160 Min. ☐ 38160-38880 Min. ☐ 38880-39600 Min. ☐ 39600-40320 Min. ☐ 40320-41040 Min. ☐ 41040-41760 Min. ☐ 41760-42480 Min. ☐ 42480-43200 Min. ☐ 43200-43920 Min. ☐ 43920-44640 Min. ☐ 44640-45360 Min. ☐ 45360-46080 Min. ☐ 46080-46800 Min. ☐ 46800-47520 Min. ☐ 47520-48240 Min. ☐ 48240-48960 Min. ☐ 48960-49680 Min. ☐ 49680-50400 Min. ☐ 50400-51120 Min. ☐ 51120-51840 Min. ☐ 51840-52560 Min. ☐ 52560-53280 Min. ☐ 53280-54000 Min. ☐ 54000-54720



Opening/Closing Ceremonies

(Club Hood & Phantom Run)



WHO: VIPs, industry, observers,
community leaders
WHAT: Opening Ceremony
WHEN: Evening of 31 AUG 09
WHERE: Club Hood
WHY: Encourage development of
autonomous systems supporting
warfighter operational needs



WHO: VIPs, industry, observers, community
leaders
WHAT: Closing Ceremony
WHEN: Afternoon of 03 SEP 09
WHERE: Phantom Run
WHY: Encourage development of autonomous
systems supporting warfighter operational
needs



What we owe you



- Details on the participation fee for RTOD2 and the Extravaganza
- Extravaganza only request form
- After reviewing the submissions:
 - Vendor demonstration plan
 - Schedule for both RTOD2 and the Extravaganza
- Keep checking the website for the latest Rodeo information!



Questions?